Determination 2007/2

Refusal of a code compliance certificate for a straw bale building with a plastered cladding system at 74A Awanuiarangi Road, Pikowai



1. The matter to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the Building Act 2004¹ ("the Act") made under due authorisation by me, John Gardiner, Determinations Manager, Department of Building and Housing ("the Department"), for and on behalf of the Chief Executive of that Department. The applicant is the owner, Mr Overington, who was also the builder ("the applicant"); and the other party is the Whakatane District Council ("the territorial authority").
- 1.2 The matter for determination is whether the territorial authority's decision to decline to issue a code compliance certificate for a 6-year-old house that was completed two years ago following a 4-year period of construction, because it was not satisfied that the building work complied with clause B2 "Durability" of the Building Code² (First Schedule, Building Regulations 1992), is correct.

The question to be determined is whether a code compliance certificate is to be issued despite the fact that it is not, in the view of the territorial authority, now (December 2006) possible to be satisfied that the building complies with clause B2

¹ The Building Act 2004 is available from the Department's website at www.dbh.govt.nz.

² The Building Code is available from the Department's website at www.dbh.govt.nz.

of the Building Code considering the time that has elapsed since those elements were constructed.

- 1.3 In order to assist me in developing a view on this matter I commissioned an independent specialist ("the specialist"), experienced in this type of strawbale construction, to advise on this dispute (refer paragraph 5.1). The expert was instructed to carry out an inspection of the house to verify compliance with clauses E2 and B2. In making my decision, I have considered the submissions of the parties, the specialist's report, and the other evidence in this matter.
- 1.4 In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

2. The building

- 2.1 The building work consists of a detached house situated on a flat rural site, which is in a very high wind zone for the purposes of NZS 3604³. The house is one storey high, with specifically engineered construction. The building is a reasonably simple shape made up of two linked rectangular structures. The exterior walls are made up of a timber post and beam structure with steel rod cross bracing. The structure is infilled with non-loadbearing straw bales to form mass walls about 500mm thick that have solid plaster applied to both sides. The building has a concrete slab and foundations, corrugated "Onduline" hipped roofs, and aluminium windows that are recessed into the face of the walls by about 150mm. The roof pitches are generally 27° (reducing to 12.5° above the outer areas of the house roof), with eaves projections of 900mm overall above most walls. A 2.1m deep verandah wraps around the northern half of the house, with timber pergolas extending from the edge of the verandah roof.
- 2.2 The specialist has noted that the timber used in the post and beam structure is heart macrocarpa. I note that NZS 3602^4 , Table $1D.1^5$ indicates that no treatment is required for structural grade heart macrocarpa.
- 2.3 The straw bale walls of the house are finished externally and internally with a threecoat mesh-reinforced solid plaster system. The metal wire mesh is tied through the bales at 600mm centres, and the first plaster coat varies between 25mm and 50mm to provide an even substrate for the final coats. The first coat was applied by the applicant and cured for about 6 months before "Sustainable Structures" ("the designers") applied the two final "Nu-Age" plaster coats. The finished plaster is coated with a "Fresco" breathable silicone resin emulsion paint system.
- 2.4 Fresco Colours Ltd provided a 5-year "Coating system performance guarantee" for the paint system, with the applicant listed as the applicator of the system.

³ New Zealand Standard NZS 3604:1999 Timber Framed Buildings

⁴ New Zealand Standard NZS 3602:2003 Timber and Wood Based Products for Use in Building

⁵ For framing protected from the weather but with a risk of moisture penetration from solar driven moisture through absorbent claddings

3. Sequence of events

- 3.1 The territorial authority issued a building consent (No 8535) on 1 August 2000. Construction appears to have started in July 2001 and extended over about 4 years.
- 3.2 The territorial authority carried out various inspections during construction; including pre-plastering on 10 December 2003 and the final plaster application on 6 July 2005. The designers also made periodic visits during construction. The territorial authority carried out a final inspection on 15 August 2006, and the inspection record identifies various outstanding items.
- 3.3 In a letter to the applicants dated 15 August 2006, the territorial authority said it was not in a position to issue the code compliance certificate, saying:

Due to the time which has elapsed since the building consent was issued and the final inspection being requested (being 6 years) the Council will not be in a position to issue any code compliance certificate for this project. This is because, as a result of the time lapsed, the Council cannot now be satisfied on reasonable grounds the building work and elements will continue to satisfy the durability provisions of the Building Regulations 1992 for the prescribed period after the code compliance certificate has been issued. This time period being prescribed in statue as ten (10) years from the date of issue of the [CCC].

The letter also listed nine outstanding items. Those relating to the building's durability were:

- ground clearance in some areas not maintained
- beam penetrations not adequately weather sealed
- cracks evident within the exterior plaster cladding
- details of the exterior cladding coating system not provided as per condition of consent.

3.4 In his submission to the Department, dated 18 August 2006, the applicant noted that:

During the final inspection I was informed . . . that the [territorial authority] has a policy whereby they refuse to issue a c.c.c. if the period between the issue of the building consent and the application for the CCC is greater than five years. The reason given for this was that the age of the building at the time of issuing the c.c.c. increases the potential liability of the [territorial authority] due to . . . having to warrant the building meets the durability aspects of the building code for a period of ten years from the issue of the certificate.

Please note that as a result of the final inspection a number of minor compliance issues were identified and are in the process of being rectified. This application for a determination is not related to these issues.

- 3.5 The territorial authority did not issue a notice to fix as required under section 164(2) of the Building Act 2004.
- 3.6 An application for a determination was received by the Department on 28 August 2006.

4. The submissions

- 4.1 In a statement dated 18 August 2006, which accompanied the application, the applicant outlined the history of the project and explained that the work had continued slowly but consistently, with all required inspections carried out. At no time had the applicant been informed that there was a time limit on the construction period, or that he was in danger of becoming ineligible for a code compliance certificate due to a five year limit imposed as a policy by the territorial authority. The applicant also noted that other outstanding items identified in the final inspection were in the process of being rectified and the application did not relate to those matters.
- 4.2 The applicant forwarded copies of:
 - the plans
 - the consent documentation
 - the territorial authority's inspection summary
 - the letter dated 15 August 2006 from the territorial authority
 - various engineering drawings, calculations and other statements.
- 4.3 A copy of the applicant's submission was provided to the territorial authority, which made no submissions in response, nor did it make any initial submissions of its own.
- 4.4 A copy of the first draft determination was issued to the parties on 28 November 2006.
- 4.5 The territorial authority made no response to the first draft.
- 4.6 The applicant responded to the first draft in an email also dated 28 November 2006. In the email the applicant challenged the emphasis given in the draft to the performance of the cladding stating this was not in dispute. The applicant questioned how the cladding could be related to the matter of the durability which the applicant maintained was the only matter in dispute. The applicant also said:

The [territorial authority] is not disputing that I have constructed the house as per the approved consent.

[The matters in dispute] are entirely separate matters from this application and have never been contested. It is quite apparent in the council letter that these are secondary issues.

Is the [territorial authority] justified in refusing to issue a c.c.c. based solely on the amount of time that it has taken me to build my house?

The question of durability raised by the [territorial authority] is in relation to the 10 year liability period of the council and not the durability periods stated in clause B2 of the building code.

Given the nature of the issue, I question the necessity of the specialist's report. No one is saying that I have failed to build the house as per the consent.

4.7 I considered these comments and accordingly issued the second draft determination on 4 December 2006. I do not agree that the question of durability can be fully separated from other compliance matters unless the territorial authority fully accepts that the building complies with the building code in all other respects. A necessary condition for compliance with clause B2 is that compliance with clause E2 has been achieved. In any event I am obliged to consider the building work in relation to the requirements of the Building Code rather than to the requirements of the territorial authority's liability.

- 4.8 It does not appear that the building has been built in accordance with the building consent (refer fourth bullet point in paragraph 3.3). As noted above (paragraph 4.3), I did not receive a submission from the territorial authority in response to the application for determination, or any confirmation of the statements attributed to the territorial authority in the applicant's email dated 14 November 2006 (refer paragraph 5.12).
- 4.9 The applicant responded to the second draft determination in an email to the Department dated 4 December 2006, which explained in more detail his contention that the issue of the age of the building consent should be simply disconnected from any other outstanding matters with the Determination limited to the former, as:

No other issues are contested. In fact all defects listed in paragraph 6.3.1 have long since been rectified.

- 4.10 The territorial authority responded to the second draft determination in a letter to the Department dated 8 December 2006. The territorial authority stated that it refused to issue a code compliance certificate because it was not satisfied on reasonable grounds that the building work and building elements will continue to satisfy the:
 - 1. durability provisions of the Building Code
 - 2. external moisture provisions of the Building Code
 - 3. personal hygiene provisions of the Building Code
 - 4. laundering provisions of the Building Code
 - 5. requirements of section 92 relating to energy work certificates.

The territorial authority listed eight items relating to item 1 above and had concerns about the curing of the stucco plaster and the lack of control joints. The territorial authority also considered that there was a high level of uncertainty regarding the structure's ability to satisfy, and continue to satisfy, certain requirements of the building code. The territorial authority noted that it would be helpful if the determination included a prescriptive maintenance and inspection programme as developed by the specialist. I have commented on this suggestion in paragraph 8.5.

- 4.11 I considered the applicant's and the territorial authority's comments, and issued the third draft determination on 20 December 2006.
- 4.12 The applicant responded to the third draft determination via an email to the Department dated 10 January 2007, in which he expressed his dissatisfaction with length of time allowed for responses to the draft determinations and concluded:

Purely in the interest of expediting the process and avoiding the issuing of yet another draft, we have no comment to make regarding the 3rd draft.

- 4.13 In a letter to the Department dated 10 January 2007, the territorial authority accepted the third draft determination subject to the non-contentious comments and explanations summarised as follows:
 - The time allowed for responding to the third draft was unrealistic, considering the number of working days within the Christmas period.
 - The range and depth of concerns were significantly greater than the curing of the stucco plaster and the lack of control joints as stated in paragraph 4.10 (further detailed concerns were listed).
 - The comments of the specialist regarding the quality of the workmanship conflicted with his comments regarding the inadequate sealing of penetrations.
 - The specialist's comment in paragraph 5.13 of the third draft regarding the lack of inspections is not a good signal to the industry as robust inspection regimes are necessary to establish compliance with the building code.
- 4.14 I have considered the territorial authority's comments, and have amended the third draft determination where I consider appropriate.

5. The specialist's report

- 5.1 Initially, because the territorial authority did not respond to the application for determination, I had no direct evidence from the territorial authority on the reasons for non compliance with the durability provisions of the Building Code (clause B2), apart from the applicant providing me with its letter dated 15 August 2006. That letter gave a reason being "a result the time lapsed" and listed a number of items of which four related to issues of the cladding. The evidence provided by the applicant indicated that these points were no longer in dispute, but it was important for me to establish if the cladding was compliant with B2, as the letter indicated it was not. For a building to be compliant with B2 it also needs to be compliant with clause E2.
- 5.2 I sought advice from an independent expert who has considerable experience with alternative construction methods including earth and straw bale construction. The specialist is the Chairman of the Standards Technical Committee for earth building and has been the primary author for BRANZ⁶ on straw bale guidelines in New Zealand.
- 5.3 The specialist inspected the cladding of the building on 19 October 2006, and furnished a report that was completed on 31 October 2006. The specialist noted that (apart from items noted in paragraph 5.7) the workmanship appeared to be good, with flashings "tidy and effective", surfaces straight and well-finished, no significant cracking, and only minor cosmetic finishing flaws apparent. The specialist noted that the building had been constructed generally in accordance with the consent documents, with the only notable changes being the alteration of some window heights and the omission of external shelter walls.

⁶ Building Research Association of New Zealand

- 5.4 The specialist was satisfied, from questioning the applicant and designer (who were present during his inspection), that the "Comforth" uPVC flashings shown on the drawings had been satisfactorily installed at all external windows and doors. In the absence of elevated moisture levels under the sills, the specialist did not consider further invasive moisture testing to be necessary.
- 5.5 The specialist obtained a specialised "Delmhorst hay bale moisture meter" with a 500mm probe suitable for straw bale walls. The specialist noted that while this type of meter is not strictly calibrated for straw, the international straw bale industry generally accepts that the readings given by the meter provide reasonably accurate indications of the moisture content within straw bale walls.
- 5.6 The specialist inspected the inside of the house, and noted no signs or smell of dampness. The specialist took invasive moisture readings at the top, bottom and under window sills of high risk external walls, and noted that one reading was 14%, with all other readings ranging from 8% to 11%. (I note that moulds may grow within straw bales if the moisture level exceeds 15%.) The specialist also noted that the straw from all drill holes appeared to be "clean and bright".
- 5.7 Commenting specifically on the cladding, the specialist said that:
 - there is a slight hairline crack in the external plaster to a sheltered area on the eastern wall (which would be satisfactorily sealed with another coat of the finishing paint)
 - the penetrations of pipes and the pergola beams through the cladding are not adequately sealed
 - there are minor areas of incomplete coating around some joinery openings.
- 5.8 The specialist noted that, although he had observed some inadequate ground clearances, the applicant had subsequently forwarded photographs showing that these areas had been satisfactorily remedied following the inspection.
- 5.9 The specialist noted that although control joints could not be verified, there was no evidence of uncontrolled cracking as would be expected at high risk areas such as window corners (refer paragraph 6.3.2).

5.10 **The specialist's conclusions**

- 5.10.1 The specialist noted that while he regarded the building to be at high risk of moisture penetration through the stucco plaster due to the exposed site, the building was currently weathertight.
- 5.10.2 The specialist also considered that, should there be any moisture penetration into the straw bale infill walls in the future, this would soon become very obvious and repair work or straw bale replacement could be carried out quite quickly. In this instance where the straw bale walls are constructed as relatively discreet infill panels the walls would be moderately easy to access but would be moderately difficult to replace, so a durability period of not less than 15 years is considered appropriate.

- 5.10.3 The specialist recommended that, as part of normal maintenance, an annual inspection for cracks in the external plaster or any signs of moisture ingress be undertaken and that any remedial action be undertaken immediately as required.
- 5.10.4 The specialist concluded:

That these walls have been up for some time now with no apparent problem gives some confidence in predicting that it is likely, in my opinion, on the balance of probabilities, that these walls will meet the requirements of NZBC B2 and E2 if regular inspection and maintenance is undertaken.

- 5.11 Copies of the specialist's report were provided to each of the parties.
- 5.12 In an email to the Department on 14 November 2006, the applicant noted that he had met with the territorial authority to discuss the specialist's report. During that meeting, the territorial authority had indicated that:

... they would be happy to issue a c.c.c with the proviso that their liability be reduced from the standard ten years from the date of issue (of the c.c.c), to ten years from the date of the issue of the building consent. This would take into account the existing age of the building (the only real issue at hand). They inform me that the law as it stands does not support them doing this and it can only be done at the direction of the DBH. I would be very happy with this outcome and urge you to give it consideration ...

- 5.13 The specialist was also asked by me to comment on the territorial authority's submission of 8 December 2006 regarding the second draft determination. In an email of 18 December, the specialist responded in detail to the durability issues raised by the territorial authority as follows:
 - While the structural frame was exposed to the weather for some time, there was no visible evidence that the building had deteriorated. However, the ground clearances could pose some risk to the cladding.
 - If the straw wall construction remains dry, as is the situation at present, durability is assured. The stucco plaster itself is presumably not a durability issue.
 - The lack of inspections is not a code-compliance matter. However, I also note that robust inspection regimes are an important factor in providing territorial authorities with reasonable grounds on which to be satisfied that building work complies with the building code.
 - The details of the exterior coating system have now been provided.
 - The lack of waterproofing at cladding projections needs addressing.
 - The visible cracks are only of a minor nature, only occurred in the surface coat, and are easily remedied.
 - There are no observable defects in the structure since it has been completed.
 - The lack of ground clearance has already been noted as being a problem.
- 5.14 I took into account the comments from the territorial authority and the specialist on the second draft determination and made appropriate amendments in the third draft determination.

6. Evaluation for code compliance for matters related to durability

6.1 **Evaluation framework**

- 6.1.1 In evaluating the design of a building and its construction, it is useful to make some comparisons with the relevant Acceptable Solution⁷, in this case E2/AS1, which will assist in determining whether the features of this house are code compliant. However, in making this comparison, the following general observations are valid:
 - Some Acceptable Solutions cover the worst case, so that they may be modified in less extreme cases and the resulting alternative solution will still comply with the Building Code.
 - Usually, when there is non-compliance with one provision of an Acceptable Solution, it will be necessary to add some other provision to compensate for that in order to comply with the Building Code.
- 6.1.2 The approach in determining whether building work is weathertight and durable and is likely to remain so, is to apply the principles of weathertightness. This involves the examination of the design of the building, the surrounding environment, the design features that are intended to prevent the penetration of water, the cladding system, its installation, and the moisture tolerance of the external framing. The Department and its antecedent, the Building Industry Authority, have also described weathertightness risk factors in previous determinations⁸ (refer to Determination 2004/1 *et al*) relating to cladding and these factors are also used in the evaluation process.
- 6.1.3 The consequences of a building demonstrating a high weathertightness risk is that building solutions that comply with the Building Code will need to be more robust. Conversely, where there is a low weathertightness risk, the solutions may be less robust. In any event, there is a need for both the design of the cladding system and its installation to be carefully carried out.

6.2 Weathertightness risk

- 6.2.1 In relation to these characteristics I find that this house:
 - is built in a very high wind zone
 - is a maximum of one storey high
 - is reasonably simple in plan and form
 - has eaves projections of more than 900mm or more, which provide good protection to walls and windows beneath them
 - has plastered straw bale exterior wall cladding

⁷ An Acceptable Solution is a prescriptive design solution approved by the Department that provides one way, but not the only way, of complying with the Building Code. The Acceptable Solutions are available from the Department's website at www.dbh.govt.nz.

⁸ Copies of all determinations issued by the Department can be obtained from the Department's website.

- has a timber post and beam structure that is heart macrocarpa, so providing some resistance to the onset of decay if the timber absorbs and retains moisture.
- 6.2.2 When evaluated using the E2/AS1 risk matrix, the elevations of this house demonstrate a low weathertightness risk. The matrix is an assessment tool that is intended to be used at the time of application for consent, before the building work has begun and, consequently, before any assessment of the quality of the building work can be made. Poorly executed building work introduces a risk that cannot be taken into account in the consent stage but must be taken into account when the building as actually built is assessed for the purposes of issuing a code compliance certificate. However, I also note that the specialist regards this strawbale house to be a high risk building when considered in relation to its particular construction methods (refer paragraph 5.10.1).

6.3 Weathertightness performance

- 6.3.1 Generally the cladding appears generally to have been installed with good workmanship and in accordance with good trade practice. However, some junctions, penetrations and edges are not well constructed, as described in paragraph 5.7 and in the specialist's report. I accept the specialist's opinion that work is necessary to fix the following:
 - The hairline crack in the external plaster.
 - The inadequate ground clearances.
 - The inadequate weatherproofing of the pipes and the pergola beams.
 - The areas of incomplete coating around some joinery openings.
 - Any other building elements associated with the above that are consequently discovered to be in need of rectification.
- 6.3.2 I note the specialist's comment in paragraph 5.9 with regard to the lack of evidence of control joints. Notwithstanding the lack of uncontrolled cracking, I must conclude that control joints have not been installed, but I consider that the long curing period of the stucco over about 18 months has not produced any evidence of any significant cracking. During the period since construction, all drying shrinkage in the plaster and timber structure will have likely occurred, and the future performance will be governed solely by response to environmental factors such as imposed temperature and moisture effects, wind, earthquake forces and seasonal foundation movements.
- 6.3.3 I also note the specialist's comments in paragraph 5.10.3, and accept that regular ongoing maintenance and inspection is critical to preserve the weathertightness of this house. I therefore consider that an appropriate maintenance and inspection regime for the straw bale walls of this house should be established with specified maintenance requirements which include checking the plaster coating annually and after strong wind or earthquakes for cracks and signs of moisture ingress. I comment further on this matter in paragraph 8.5.

7. Discussion

- 7.1 As set out in paragraph 3.3, the territorial authority has concerns about the durability of the building, and hence its compliance with the building code, taking into consideration the 6-year time delay between the issuing of the building consent and applicant's request for a code compliance certificate.
- 7.2 The building consent was issued in 2000, the construction of the house began in 2001 and the first plaster coating appears to have been applied to the exterior walls in early 2004. It therefore appears that most of the building work (apart from the exterior plaster to the walls) was substantially completed during 2004.
- 7.3 The relevant provision of clause B2 of the Building Code recognises that building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for certain periods ("durability periods") "from the time of issue of the applicable code compliance certificate" (clause B2.3.1).
- 7.4 These durability periods are:
 - 5 years if the building elements are easy to access and replace, and failure of those elements would be easily detected during the normal use of the building
 - 15 years if building elements are moderately difficult to access or replace, or failure of those elements would go undetected during normal use of the building, but would be easily detected during normal maintenance
 - the life of the building, being not less than 50 years, if the building elements provide structural stability to the building, or are difficult to access or replace, or failure of those elements would go undetected during both normal use and maintenance.
- 7.5 I note the territorial authority appears to have incorrectly described the durability period prescribed in the Building Code as "being prescribed in statue as ten (10) years . . ." (see paragraph 3.3).
- 7.6 I have considered the matter of a waiver or modification of the durability provisions of the building code with regard to this particular building. I note that, although construction started in 2001, the building was not substantially complete until 2004. If a modification of the commencement of the durability provisions was to be considered, the durability period would commence when compliance with B2 Durability was achieved, which in this instance appears to have taken place in 2004. Therefore modifying the commencement of the durability period to 2004 would have little effect.
- 7.7 I note that the oldest elements of this building are only about 5 years old, and that the building element of most concern to the territorial authority, as evidenced by the outstanding items listed in its letter dated 15 August 2006 (the external walls), is about 2 years old.

- 7.8 I also note the specialist's comments as outlined in paragraph 5.10.4 and accept that, with the provision of regular maintenance and inspection, the walls are likely to continue to meet the requirements of the building code for the required durability period of 15 years.
- 7.9 I therefore take the view that a waiver or modification of the durability provisions of the building code is not appropriate in this case.
- 7.10 I do acknowledge that some of the territorial authority's concerns relate to the extended time lapse between the issuing of the building consent and the completion of the work (refer paragraph 3.3). However, as discussed above, a waiver of the durability provisions cannot deal with this circumstance. A waiver can only be used, if appropriate, to deal with excessive time gaps between completion of the work and the application for a code compliance certificate. Had the consent been issued under the Building Act 2004 (rather than the Building Act 1991) the territorial authority will have been able to invoke section 93 to assist in these circumstances.
- 7.11 In its submissions on the second draft determination, the territorial authority, in addition to the items that I have discussed above, raised queries relating to the personal hygiene and laundering provisions of the Building Code, as well as the requirement to provide energy work certificates. I have been informed by the applicant that he has addressed, or will be addressing, these matters. Accordingly, I have not included them in this determination.

8. Conclusion

- 8.1 I consider that the specialist's report establishes there is no evidence of external moisture entering the building, and accordingly, that the cladding system complies with clause E2 at this time.
- 8.2 However, the building is also required to comply with the durability requirements of clause B2. Clause B2 requires that a building continues to satisfy all the objectives of the Building Code throughout its effective life, and that includes the requirement for the building to remain weathertight. As there are a number of items to be remedied to ensure it remains weathertight, I find that the building does not comply with clause B2 because the cladding faults on the building are likely to allow the ingress of moisture in the future.
- 8.3 I consider that rectification of the items outlined in paragraph 6.3.1, along with any other faults that may become apparent in the course of that work, together with the maintenance outlined in paragraph 6.3.3, to the approval of the territorial authority, will consequently result in the house remaining weathertight and in compliance with clauses B2 and E2.
- 8.4 Effective maintenance of claddings (in particular of this type of cladding) is important to ensure ongoing compliance with clauses B2 and E2 of the Building Code and is the responsibility of the building owner. Clause B2.3.1 of the Building Code requires that the cladding be subject to" normal maintenance", however that term is not defined in the Act.

- 8.5 As I noted in paragraph 6.3.3, I consider that an appropriate maintenance and inspection regime for the straw bale walls of this house should be established with specified maintenance requirements which include checking the plaster coating annually, and after strong wind or earthquakes, for cracks and signs of moisture ingress. It is not the responsibility of the territorial authority or of the Department to initiate such a maintenance and inspection programme. However, to ensure the ongoing durability of the building the applicant would be well advised to establish such a regime, and could consider discussing the matter with the specialist.
- 8.6 While the specialist reports no significant cracking of the plaster cladding to-date, cracking in the future would compromise the weathertightness and therefore durability of this straw bale building. Regular inspections of the plaster should be a necessary part of any maintenance system.

9. The decision

- 9.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the building work does not comply with clause B2 of the Building Code, and accordingly confirm the territorial authority's decision to refuse to issue a code compliance certificate.
- 9.2 I note that the territorial authority has not issued a notice to fix. A notice to fix should be issued that requires the applicant to bring the building into compliance with the Building Code, identifying the defects listed in paragraph 6.3.1, but not specifying how those defects are to be fixed. That is a matter for the applicant to propose and for the territorial authority to accept or reject. It is important to note that the Building Code allows for more than one method of achieving compliance.
- 9.3 I would suggest that the parties adopt the following process to meet the requirements of paragraph 9.2. Initially, the territorial authority should issue a notice to fix, listing all the items that the territorial authority considers to be non-compliant. The owner should then produce a response to this in the form of a detailed proposal, produced in conjunction with a competent and suitably qualified person, as to the rectification or otherwise of the specified issues. Any outstanding items of disagreement can then be referred to the Chief Executive for a further binding determination.

Signed for and on behalf of the Chief Executive of the Department of Building and Housing on 12 January 2007.

John Gardiner Determinations Manager